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Radiological Dispersal Device Incident Response Planning: Training and Exercises

PURPOSE

Details training resources and exercise initiatives that emergency response organizations can use to help prepare emergency response staff members for a radiological dispersal device (RDD) incident.

SUMMARY

Emergency response organizations need to ensure that all personnel likely to respond to an RDD event have the appropriate training enabling them to perform their expected duties and functions proficiently. These organizations can consider conducting RDD exercises on a regular basis to test emergency responders' ability to respond to such an event. Exercises need to involve all personnel likely to respond to an RDD event as well as local radiation subject-matter experts (SME) who may be called to assist responders during an RDD emergency.

DESCRIPTION

Emergency response organizations should consider establishing RDD-specific training and exercises for emergency personnel within a jurisdiction. Exercise planners need to consider local vulnerabilities, resources, and requirements when developing RDD exercises. Planners also need to assess the likelihood of an RDD event taking place in their jurisdictions when determining the frequency and objectives of these exercises. This Best Practice document provides exercise planners with resources that they can use when developing or revising their RDD exercises and training programs.

Training

Emergency responders who arrive first onsite of an RDD event may not understand the nature and danger of such an event if they have not received appropriate training. RDD training can be critical for these responders because specialized resources or local SMEs may not be available to assist them at the onset of emergency response.

The California Emergency Medical Services Authority established the *CBRNE: Emergency Preparedness for Medical Care Providers* training program for healthcare providers in the State of California. This program presents preparedness actions and safety measures for medical and healthcare staff members responding to an RDD emergency.

Experts have observed during several RDD exercises that responders' lack of knowledge has often delayed contaminated victims' rescue and has prompted the implementation of incorrect protective actions. Periodic training can help emergency response personnel understand the expected radiological hazards of an RDD. Training also can ensure that

emergency personnel are familiar with radiation principles, can recognize radiation exposure symptoms, and can use radiation detection equipment efficiently.

Training for emergency response following an RDD event should achieve several essential objectives, including:

- Enhancing emergency responders' ability to take appropriate measures to protect themselves and the public; and
- Increasing emergency responders' confidence when managing an emergency that involves radioactive materials or radiation.

Essential Training Competencies

All emergency response personnel should be trained at a level corresponding to the duties and responsibilities that they will be expected to perform during an RDD incident. Planners can establish training programs for emergency responders and receivers as well as radiation experts who could be called to assist responders after an RDD event.

Emergency Responders

Training could address the impact of radiation and radioactive contamination in emergency response activities. Training needs to be tailored to the trainees' knowledge of radiological principles as well as to their levels of responsibility and specific functions at an RDD incident scene, specifically:

- Responders likely to arrive first onsite of an RDD event as a minimum need to be trained to recognize the radiological component of such an event, to understand the risks associated with the release, and to take basic actions to minimize their radiation exposure. These responders also should understand the need for additional resources and should notify the proper authorities. This training can be especially beneficial for law enforcement and security personnel.
- Most firefighters and emergency medical response personnel, as a minimum need to be trained to contain the radioactive release safely and to minimize exposure by moving victims or keeping the public away from the incident site. These responders also should be competent in using appropriate personal protective equipment and monitoring instruments, implementing basic decontamination procedures, performing first-aid and life-saving activities for contaminated patients, and should understand the standard operating procedures appropriate for this type of event.
- Hazardous material technicians should be able to use field survey instruments and equipment and to direct or advise on initial protective actions. These responders also should be capable of using local available resources to contain the release.
- Incident commanders at a minimum should be trained to understand the challenges of an RDD emergency response, should implement the local RDD emergency response plan, and should be familiar with available federal, state, and local resources and how to contact and activate them.

First Receivers

First receivers should be trained specifically to receive contaminated patients after a mass casualty incident. The National Council on Radiation Protection and Measurements' (NCRP) *Key Elements of Preparing Emergency Responders for Nuclear and Radiological Terrorism*, NCRP Commentary No. 19 identifies essential knowledge, skills, and abilities that first receivers will require to prepare for and to respond to an RDD event.

First receivers are healthcare workers who might risk exposure when hospitals or healthcare facilities receive contaminated patients.

Radiation Experts

Plans can include guidelines for training radiation experts to understand basic emergency response requirements and procedures. These SMEs can be trained to integrate their technical knowledge into the local emergency response framework. Training also could emphasize the application of their radiological expertise to local requirements, resources, and likely RDD incident conditions.

Many organizations routinely train emergency response personnel to respond to an RDD event. Some examples of these training programs are:

- Johns Hopkins Center for Public Health Preparedness' "Dirty Bombs: Radiation Risk and Response" consists of online audio and video presentations on radiological terrorism and dirty bomb emergency response.
- New Mexico State University, Carlsbad Environmental Monitoring & Research Center offers *The Radiation Dispersion Devices (RDD) Training* program. This program trains local first responders in RDD emergency response procedures. This course provides responders with sufficient information to provide effective incident command and control, to determine the affected area, and to address immediate concerns such as fire and rescue of victims. The program also helps responders support advanced radiological event teams, such as the Department of Energy's Radiological Assistance Program team that will arrive onsite within 12 to 24 hours of the event.
- Worcester Fire Department, in Worcester, MA, established a training program for emergency responders following a radiological event. A *Radiation Handbook* that includes RDD incident response measures is provided.

Federal Training Programs

Several federal departments and agencies offer training courses and resources to help emergency responders prepare for an RDD incident or other radiological event. These courses range from basic radioactive principles to large-scale radiological incident response procedures.

Selected Training Institutions

A number of institutions offer online training and certification for emergency personnel who might respond to an RDD event. These courses provide basic information on radiation principles, emergency response procedures, protective actions, the role of federal response teams, and state and local emergency response resources and expertise.

- **Department of Energy (DOE), Emergency Operations Training Academy (EOTA)**: EOTA's mission is to train DOE emergency operations personnel. EOTA provides oversight for all emergency operations training at all DOE/National Nuclear Security Administration facilities. Many of EOTA's courses are self-study classes that are accessible online. EOTA offers courses on radiation principles, pagers, protective actions, Radiological Assistance Program (RAP) activities, etc.

The DOE Office of Emergency Management's Transportation Emergency Preparedness Program (TEPP) was developed as a nationwide program to ensure training consistency for responders involved in a radiological material transportation incident response. The Modular Emergency Response Radiological Transportation Training provides materials on such topics as radioactive materials, initial response issues, radiological instrumentation, incident control, and offensive actions at radioactive material incident sites.

The Volpentest HAMMER Training and Education Center is a DOE training facility that specializes in hands-on training for the Hanford Site and the nation's homeland security mission. HAMMER provides RDD training courses and exercises specifically tailored to meet jurisdictions' objectives and needs.

- **Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), Public Health Training Network**: The CDC Public Health Training Network offers Web casts such as "The Role of Public Health in a Nuclear or Radiological Terrorist Incident," "Medical Response to Nuclear and Radiological Terrorism," "Preparing for Radiological Population Monitoring and Decontamination," and "Radiological and Nuclear Terrorism: Medical Response to Mass Casualties." These courses provide public health personnel with information about the role of federal response teams and local and state public health services. The courses also present information on radiation principles, signs and symptoms of radiation syndrome, decontamination procedures, possible radioactive material release scenarios, radiation protective measures, and evacuation and sheltering guidelines.
- **Department of Homeland Security, Federal Emergency Management Agency, Emergency Management Institute**: The Emergency Management Institute offers traditional courses as well as downloadable, Web-based, and computer-based training. The National Emergency Training Center's (NETC) Virtual Campus is the FEMA online training site. NETC Virtual Campus courses are intended for emergency management personnel, fire service personnel, emergency responders, Department of Homeland Security personnel, and the public.

> Department of Homeland Security offers an online *Compendium of Federal Terrorism Training for State and Local Audiences*. The Compendium is meant to help responders identify and access available resources. Several of these courses include RDD incident response operations.

- **Oak Ridge Institute for Science and Education's (ORISE) Radiation Emergency Assistance Center/Training Site (REAC/TS)**: REACT/TS offers several courses in handling radiation emergencies. The courses are taught at the facilities at Oak Ridge Associated Universities in Oak Ridge, TN. ORISE is also accredited to provide continuing medical education for physicians by the Accreditation Council for Continuing Medical Education.

Exercises

Exercises can test responders' abilities to coordinate for and respond to a radiological emergency. The NNSA's *Municipal Radiological/Nuclear Emergency Preparedness Plan* advises jurisdictions to plan for periodic exercises that will test local emergency response capabilities after an RDD event. Staff members who should participate in RDD exercises can include first responders and receivers; hospital, communication, and mental and public health staff; as well as local SMEs who would be called to assist during RDD emergency response operations. Exercising with SMEs can help emergency responders build trust, employ local expertise and resources effectively, and develop common RDD incident response procedures.

> The Washington State Department of Health, Office of Radiation Protection employs radioactive source material during exercises to enhance realism.

NCRP Report No. 138 maintains that emergency managers should consider some specific aspects when planning for RDD exercise scenarios. These aspects include but are not limited to:

- **Highly populated urban environments**: Experts agree that an RDD attack may likely target a highly populated metropolitan area and necessitate a massive emergency response effort that will involve local, state, and federal resources.
- **Psychological and sociological components of emergency response**: Emergency responders should become familiar with the psychological and sociological aspects of incident response following an RDD event.

NCRP Commentary No. 19 recommends that jurisdictions should conduct drills and exercises at least annually.

Tabletop Exercises

Several organizations have developed RDD tabletop exercises that local planners can use when designing exercises in their jurisdictions, including:

- The Department of Homeland security, Office of Domestic Preparedness, Homeland Security Exercise and Evaluation Program (HSEEP) includes an RDD exercise manual and a presentation to help states and local jurisdictions design, develop, and conduct RDD exercises.
- The Environmental Protection Agency's Emergency Response Tabletop Exercises for Drinking Water and Wastewater Systems includes materials and guidance to help emergency planners prepare for and conduct incident response training via tabletop exercises. Scenario 5 simulates a dirty bomb explosion near a hypothetical city's water supply. This scenario includes a facilitator's guide; exercise materials, maps, and utility diagrams for the participants; and a presentation that illustrates the exercise rules.

RDD Exercises' After-Action Reports

Several jurisdictions have conducted exercises to test their emergency personnel's ability to respond to an RDD event. Emergency response organizations might find it helpful to refer to after-action reports (AAR) from RDD exercises that are accessible at *Lessons Learned Information Sharing.* These AARs include:

- Delta Fire-General Motors Radiological Dispersion Device Exercise (May 13, 2003)—Lessons Learned. This exercise was conducted on May 13, 2003, in Lansing, MI.
- Lane County Full-Scale Exercise. This exercise was conducted on March 23, 2006, in Florence, Eugene, and Veneta, OR.
- Lessons of TOPOFF II, Top Officials (TOPOFF) Exercise Series: TOPOFF 2: After Action Summary Report for Public Release, and TOPOFF 2 Exercise: After-Action Report. This exercise was conducted on May 12-16, 2003, and simulated the detonation of a radiological dispersal device in Seattle, WA.
- Radiological Dispersal Device Experiences. The "Operation Prometheus" exercise was conducted on November 4-8, 2002, in Boston, MA.

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National Council on Radiation Protection and Measurements. *Management of Radiological Terrorism Events Involving Radioactive Material.* NCRP Report No. 138. Bethesda, MD. 2001.

Links

California Emergency Medical Services Authority. *CBRNE: Emergency Preparedness for Medical Care Providers.*
http://www.emsa.cahwnet.gov/hbppc/cbrne.asp

Department of Energy. Emergency Operations Training Academy.
http://eota.doeal.gov

Department of Energy, Office of Environmental Management. Transportation Emergency Preparedness Program.
http://web.em.doe.gov/otem/program.html

Department of Health and Human Services, Centers for Disease Control and Prevention, Public Health Network. *Medical Response to Nuclear and Radiological Terrorism.*
http://www.phppo.cdc.gov/PHTN/webcast/radiation-04/default.asp

Department of Health and Human Services, Centers for Disease Control and Prevention, Public Health Network. *Preparing for Radiological Population Monitoring and Decontamination.*
http://www2a.cdc.gov/PHTN/radiological2006/default.asp

Department of Health and Human Services, Centers for Disease Control and Prevention, Public Health Network. *Radiological and Nuclear Terrorism: Medical Response to Mass Casualties.*
http://www.orau.gov/hsc/RadMassCasualties/

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http://www.cemrc.org/dirtybomb/dirtybomb.html

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http://www.hammertraining.com/